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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/602,558	06/23/2000	Toshiyuki Okuyama	5551-2	1024

7590 04/05/2006

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EXAMINER	
LUGO, DAVID B	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/602,558	OKUYAMA ET AL.	
	Examiner	Art Unit	
	David B. Lugo	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,4,9,10,13 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13 and 16* is/are allowed.

6)☒ Claim(s) *3,4,9 and 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/26/06 has been entered.

Response to Arguments

2. Applicant's arguments, see pages 2-3, filed 1/26/06, with respect to the rejection(s) of claim(s) 3, 4, 9 and 10 under 35 U.S.C. 112, first paragraph have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a new interpretation of the previously applied reference in view of Applicant's remarks.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art (APA) in view of Leonard et al. U.S. Patent 5,285,472 (previously cited).

Regarding claim 3, Applicant discloses in Fig. 19, a prior art reverse spreading device comprising complex matched filters (131, 132). Conventional matched filters, according to prior art Fig. 13, include a spread code multiplier that multiplies complex baseband signals by spread

codes and accumulative adders that produce correlation values by performing accumulative addition of the multiplied value for a symbol period of each of the I or Q components.

Applicant's APA does not disclose a frequency error correcting device that counts the number chips of an input complex baseband signal and sequentially rotates a phase of the complex baseband signal to produce a rotated corrected complex baseband signal, where the frequency error correcting device maintains the amplitude information of the I and Q components in the rotated corrected complex baseband signal.

Leonard et al. disclose correction of a frequency offset in a despreading device by rotating the phase of the baseband signal in 45° steps at eight times per cycle via a phase rotator and a modulo 8 counter prior to despreading (see Fig. 3; col. 3, lines 19-26). As indicated by Applicant in pages 2-3 of the response filed 1/26/06 (hereinafter "Remarks"), it is inherent that amplitude information is included in a modulated complex baseband signal, as the phase of the modulated carrier signal corresponds to the amplitude of the modulating signal (see Remarks, page 3, second paragraph). Accordingly, in Leonard et al., amplitude information is maintained as the in-phase and quadrature components are treated as a vector which is quantized to an octant in quantizer 36 (col. 3, lines 59-68), the amplitude information of the modulating signal being maintained corresponding to the phase of the complex baseband signal represented by the quantized octant.

It would have been obvious to one of ordinary skill in the art to use the frequency correction techniques employed by Leonard et al. in the reverse spreading device disclosed in the Applicant's APA to help eliminate frequency offset (see col. 5, lines 24-30).

Regarding claim 4, in column 3, lines 19-24, Leonard et al. state that the phase of the signals are rotated to cancel out the offset frequency component by incrementing the phase in 45° steps (i.e. $2\pi/M$ where M=8) at eight times per cycle. Thus, the function of the mod 8 counter is equivalent to that performed by the chip number counter and the step number counter combined, as the mod 8 counter supplies a signal to the phase rotator to increment the phase used in the phase rotation in cyclical steps from 0 to M-1 (where M equals 8) in accordance with the modulo operation, and the step is incremented when the number of chip periods (k) supplied from clock fc, which is at the chip rate, corresponds to one eighth of a frequency cycle (i.e. 1/8 of 2π). Further, one of ordinary skill in the art would recognize that the mod 8 counter may be implemented using separate counters including a counter for counting the number of chips, and a separate counter for performing the modulo operation. Accordingly, it would have been obvious to one of ordinary skill in the art to implement the mod 8 counter of Leonard et al. using a chip number counter and a step number counter, as this is deemed a design consideration that fails to patentably distinguish over the prior art of record.

Regarding claim 9, Applicant further discloses in prior art Fig. 19, a peak detecting section 137.

Regarding claim 10, Applicant further discloses in prior art Fig. 12, a despreading device included in a channel estimating device along with a rotation correcting circuit for detecting and correcting phase errors.

Allowable Subject Matter

5. Claims 13 and 16 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David B. Lugo

David B. Lugo
Patent Examiner

3/31/06